Our Case No. 40534-930
Client Reference No. 1980037

# IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

James W. Rudolph

Serial No.: 10/776,395

Filing Date: February 11, 2004

For: METHOD AND APPARATUS FOR MEASUREMENT OF WEIGHT DURING CVI/CVD PROCESS

Examiner: R. Gibson

Group Art Unit No. 2859

## REPLY BRIEF

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This is a reply appeal from the Examiner's Answer mailed Final Rejection dated September 10, 2004.

A personal appearance for presentation of oral argument is requested. The fee will be paid upon receipt of the Examiner's Answer.

The Examiner incorrectly characterizes the issues at hand. First of all, the claims are not substantially similar to the claims of the parent case (serial no. 09/178,399) that had been appealed. The claims in the parent case focused on a method to determine the weight change in parts during a CVI/CVD process. The claims of this case are clearly different - they involve monitoring a process parameter as well as the weight change of the parts in the furnace during the CVI/CVD process and then changing that particular process parameter to achieve the desired weight gain of the entire furnace.

The Examiner has rejected these claims without regard to the differences between the actual wording of the claims and has dismissed the claims under the guise of res judicata. For res judicata to apply, the issues must be the same. Clearly, here the issues cannot be the same - - the claims are different from the appealed claims- - consequently, these arguments are improper.

In addition, the Examiner also now alleges that the claims may have 35 U.S.C. §112, 1st paragraph problems as not being adequately described in the specification. The Examiner also erroneous concludes that these particular features are conventional in the art. This is a new argument that has never been raised by the Examiner. This is not the time or the place to raise new arguments.

Claims 15-18 have been finally rejected under 35 U.S.C. §103 (a) over Golecki et al. in view of Yoshida et al., Yano et al., Spoor, Piroozmandi, and Swartzendruber. The Examiner relies upon this improper combination to teach that Appellant's method of determining the change and weight in parts being densified by a CVI/CVD process by monitoring a particular process parameter, changing such parameter to achieve the desired weight gain was known in the art. The Appellant respectfully traverses this final rejection.

Determination of whether a combination of elements would have been obvious to one of ordinary skill in the art depends on various factors, including whether the elements exist in the art that is reasonably pertinent to the problem with which the inventor is concerned. (*In re Deminski*, 796 F.2d 436, 442 (Fed. Cir. 1986)). "When it is necessary to select elements of various teachings in order to form the claimed invention, we ascertain whether there is any suggestion or motivation in the prior art to make the selection made by the applicant." *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143 (Fed. Cir. 1985). "Obviousness is tested by "what the combined teaching of the references would have suggested to those of ordinary skill in the art." *In re Fine*, 837 F.2d 1071, 1075 (Fed. Cir. 1988). "But it 'cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination.'" *Id.* "And 'teachings of references can be combined *only* if there is some suggestion or incentive to do so.'" (emphasis in original). *Id.* Here, despite numerous pages of argument to the contrary, there is no suggestion or incentive to combine the references in the manner suggested by the Examiner.

The Examiner relies upon Golecki et al. (U.S. Patent No. 5,348,774) as the base reference to teach the method of rapidly densifying a porous structure. Golecki et at disclose the use of an in-situ weighing device (e.g. an electronic balance) to continuously monitor the weight of the substrates and susceptor during the densification run, if desired. (Golecki et al., col. 7, lines 4146). An electrical signal proportional to the weight is put out by the electronic balance to the power supply and/or pressure controller and/or mass flow controller so that the process conditions can be optimized and adjusted. (Golecki et al., col. 7, lines 45-53). A chamber houses the balance and is thermostatically slightly above room temperature to ensure stable operation of the balance (Golecki, et al., col. 7, lines 4-10). Golecki et al. weigh the internal

support for the carbon substrates located in the furnace. The Examiner further reasons that Golecki et al. disclosed there were problems with this embodiment. However, as he must, even the Examiner himself even admits, Golecki et al. do not weigh the entire furnace. And why did Golecki not make the jump the Examiner proposes now to be obvious? Load cells and weighing a storage bin were known at the time of Golecki's application. Golecki had as much or more incentive than anyone to look for other weighing methods, but did not!

To overcome this deficiency, the Examiner combines five different references, from fields of endeavor totally unrelated to CVI processing to come up with the combination and conclusion that the claims are obvious. Furthermore, there is no suggestion or incentive to combine the teaching as described by the Examiner. This is improper!

The primary reference to Golecki et al. deals with weight gain of a substrate in a CVI process due to a chemical reaction. The secondary references do not deal with a method of weight gain of a substrate in a CVI process or the weighing of an entire furnace. Yoshida et al. deal with the moisture content measuring system for coal. Yano et al. disclose an electronic balance for producing a digital output signal as a measured value in response to a force induced upon a tray. Spoor describes a strain-gage transducer incorporating a plurality of electrical resistance stain gages coupled together in a bridge network in order to remain zero-balanced under varying temperature conditions by way of dual resistance foil type unit interposed at one of the output corners of the bridge with its two like foil resistance elements occupying adjacent arms. Piroozmandi discloses a zero height load measuring system that can be installed under a storage vessel. The Piroozmandi system is a load measuring system for measuring the load carried by a support leg. Finally, Swartzendruber teaches an apparatus for precisely measuring the weight of a large amount of feed stored in bulk feed storage bins. The Swartzendruber

apparatus include a number of electrical load cells supported upon a foundation. The weight of the bulk feed bins and any feed contained therein is supported upon the load cells by bin support legs. In response to weight induced deformation of the load cell element, electrical signals are transmitted to electrical processing circuitry. This circuitry then device can then provide a display of weight remaining in the bin. From these brief descriptions, it is evident that not one of the secondary references relates to weighing a CVI furnace or use of a weighing device to weigh an entire furnace.

The Examiner weaves these unrelated references together, despite being in unrelated areas of endeavor. The Examiner asserts that it is known in the weighing arts that electronic load sensors loose accuracy when exposed to fluctuating temperatures as shown by Yano and Spoor. The Examiner further reasons since heat rises and the Golecki et al. weighing chamber is attached to the top of the CVI/CVD furnace, there is a problem with the design of the weighing device of Golecki et al. that would be apparent to the ordinary practitioner in the weighing arts—namely, the loss of accuracy caused by vapor deposit buildup on the load cells and temperature induced variations on the accuracy of the load cells as the furnace begins to heat up. Yoshida et al., according to the Examiner, show that one solution to such a problem of lost accuracy is to relocate the load cell outside of the hot chamber in order to thermally isolate the load cell (col. 3, lines 54-59). The Examiner then concludes that presumably the same effect would be achieved by placing the load cells under the supporting legs at the furnace itself without any support in the cited references. The Examiner then asserts that it is well known in the weighing art that an inexpensive way to retrofit a large existing device to enable it to weigh its contents is to place load cells under the supporting legs of the device as shown by the examples of Piroozmandi (col. 2, line 30- col. 3, line 54) and Swartzendruber (col. 2, lines 50-58). Based

upon this, the Examiner concludes that it would have been obvious to the ordinary practitioner in the weighing arts to modify the CVI furnace of Golecki et al. to place the load cells in the supporting legs of a CVI furnace because this would have been an inexpensive art recognized way to retrofit an existing large device, such as a CVI furnace, to weigh and that it would also include the advantage of placing the load cells in this location would inherently isolate the load cells from the damaging environment and temperature changes inside the furnace itself thereby increasing load cell life and accuracy.

Nowhere does the Examiner show in this combination that the furnace temperature is monitored and changed in order to achieve the desired weight gain as required by claim 15. Nowhere does the Examiner show that the combination of references teach the monitoring of the reactant gas flow, changing of the gas flow in order to achieve the desired weight gain of a part as required by claim 16. Furthermore, the Examiner does not even address monitoring the internal pressure of the furnace and changing such pressure to achieve the desired weight gain as required by claim 17. Finally, the rejection is silent as the monitoring the reactivity of the reactant gas and changing the gas flow to achieve the desired weight gain of a part as required by claim 18.

Furthermore, as explained in the applicant's specification, determining the weight change in the parts during reaction processing of the parts in a CVI/CVD furnace is important in order to adjust the process parameters to arrive at the desired density of the parts. Not one of the secondary references cited by the Examiner deals with such a problem that the applicant is concerned with-- weight gain during a reactive process or its solution as described by the Applicant in the specification and claims. Consequently, one of ordinary skill in the art would not look to all weighing references as alleged by the Examiner.

The Examiner has relied upon hindsight in reaching his obviousness determination. *Id.* See also, *In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992) ("It is impermissible to use the claimed invention as an instruction manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious.") "To imbue one of ordinary skill in the art with knowledge of the invention in suit, when no prior art reference or references convey or suggest that knowledge is to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher." *In re Fine*, 837 F.2d 1071, 1075 (Fed. Cir. 1988). "It is essential that 'the decisionmaker forget what he or she has been taught at the trial about the claimed invention and cast the mind back to the time the invention was made...to occupy the mind of one skilled in the art who is presented only with the references, and who is normally guided by the then-accepted wisdom in the art.'" *Id.* Hindsight reconstruction cannot be used " to pick and choose among isolated disclosures in the prior art to depreciate the claimed invention." The Examiner has done exactly that-- used hindsight and the Appellant's specification as a template to reconstruct and piece together the myriad of unrelated references to arrive at the conclusion of obviousness.

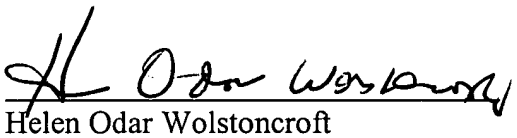
Even if the references were combined in the manner suggested by the Examiner, they still would not render obvious the Appellant's invention. As shown above, the combination of references does not teach the method of determining the change in weight in parts of a furnace during a reactive CVI/CVD process in which the weight change of the entire furnace is measured and a particular process parameter (furnace temperature, internal furnace pressure, reactivity of the reactant gas, reactant gas flow) is monitored and changed as needed to achieve the desired weight gain of the part.

## CONCLUSION

Claims 15-18 are patentably distinguished over the multitude of cited prior art references improperly relied upon by the Examiner. The obviousness rejection of Golecki et al. in view of Yoshida et al., Yano et al., Spoor, Piroozmandi and Swartzendruber is improper because there is no motivation to combine the references as suggested by the Examiner. However, even if combined, the references do not teach Appellant's claimed invention.

In view of the foregoing discussion, it is respectfully submitted that the §103 rejection is in error and that the final rejection should be withdrawn.

Respectfully submitted,



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